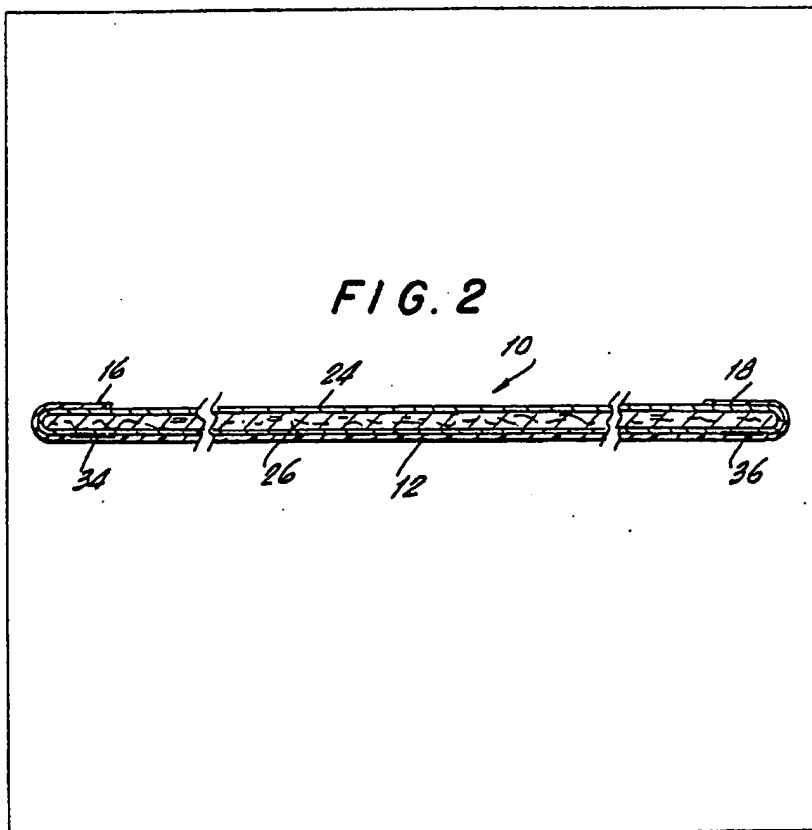


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(54) Diaper with cushioned elastic members

(57) A disposable diaper, which is preferably box-pleated, has cushioned elastic members (34 and 36) secured between the impervious backing sheet 12 and the absorbent pad (26) and is adapted to overcome leakage through the leg-hole edges while cushioning so as to reduce the incidence of indentations or marks on an infant's skin.



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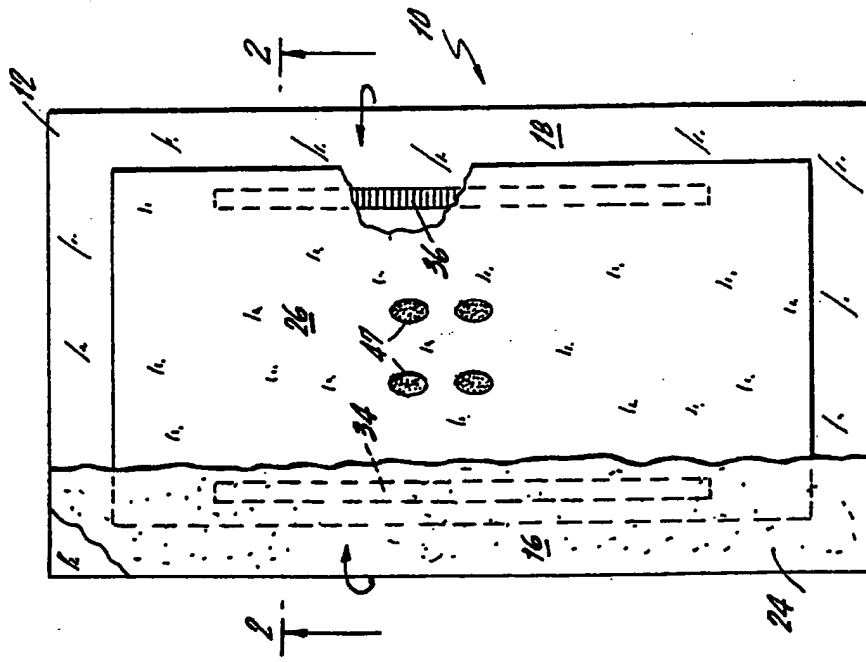


FIG. 1

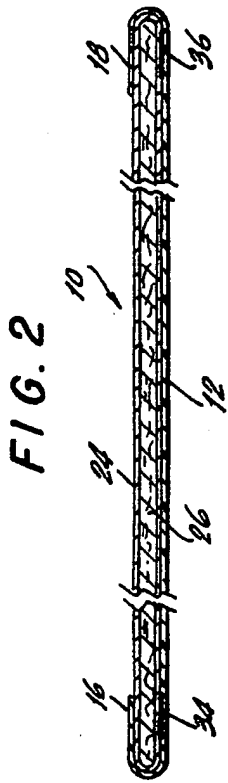


FIG. 2

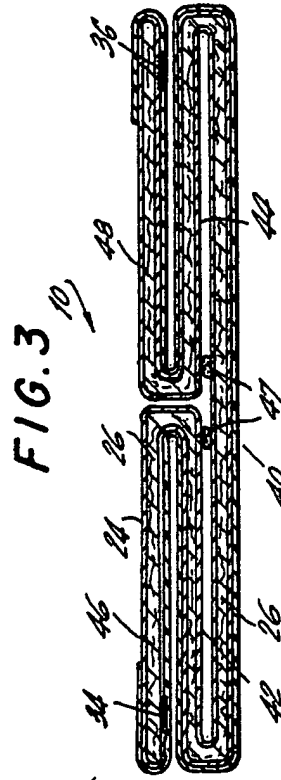


FIG. 3



FIG. 4

## SPECIFICATION

## Diaper with cushioned elastic members

This invention relates to disposable diapers and more particularly to an elasticized preferably box pleated diaper.

In the past elasticized diapers have been developed for use only with contoured shaped configurations such as an hour-glass shape, such as that disclosed in the United States Patent to Buell, No. 3,860,003, issued January 14, 1975 for "Contractable Side Portions for Disposable Diaper" wherein elastic strips are secured to the crotch portions of the diaper and spaced at least  $\frac{3}{4}$  inch (19 mms) from the absorbent pad to form elasticized crotch seals for securement over the legs of the infant to prevent loss of fluid from the interior of the diaper along the legs of the infant. The elasticized strips were placed more than  $\frac{3}{4}$  inch (19 mms) from the absorbent pad in order to prevent pleats forming transversely of the crotch area of the diaper.

Another contoured diaper is presently in production in which the elasticized strips are less than  $\frac{3}{4}$  inch (19 mms) from the absorbent pad for the production of the transverse pleats in the crotch area of the diaper for the purpose of increasing the absorbent capacity at the crotch area of the diaper. This diaper is disclosed in United States Patent No. 4,050,462. However, it has been found that these pleats may act as a channel resulting in excessive diaper leakage and the pleats in the crotch area make the infant's bottom uncomfortable when sitting, especially while the diaper is not saturated.

The elasticized construction in both the previous contoured diapers as disclosed in the aforesaid patents cause marks and indents to be formed in the skin of the infant on which these types of diapers are used.

The present invention overcomes the disadvantages of both of the prior art contoured diapers. The elastic members are placed according to the present invention in a box-pleated diaper between the absorbent pad and the backing sheet cushioning the elastic action and preventing marks and indents being formed in the skin of the infant while providing unexpectedly better protection against excessive leakage through leg hole edges.

The concept of the present invention features a box-pleated disposable diaper having an absorbent body between a top sheet and a backing sheet with elastic members secured between the backing sheet and the absorbent pad.

The invention may be put into practice in various ways and one specific embodiment will be described to illustrate the invention with reference to the accompanying drawings in which:

Figure 1 is a plan view of a box-pleated diaper constructed in accordance with the concepts of the present invention;

Figure 2 is a transverse sectional view taken along the plane of line 2—2 in Figure 1 of the diaper in an unfolded state;

Figure 3 is a section detail view similar to Figure 2 but taken on the line 3—3 and showing the diaper in a box-pleated folded configuration and

Figure 4 is an enlarged sectional detail view showing in particular the locus of an elastic member.

In the accompanying drawings, wherein like reference numerals designate similar parts throughout the various views reference numeral 10 generally designates an elasticized disposable diaper constructed in accordance with the present invention.

The box-pleated diaper 10 has a backing sheet 12 of a fluid impervious material. A fluid pervious sheet 24, typically of non-woven fibres such as polyethylene or polypropylene fibres, is provided and the backing sheet 12 has portions 16 and 18 folded over and sealed to edges of the top sheet. An absorbent pad 26 of wood fluff or the like is disposed between the top sheet 24 and the backing sheet 12. It will be observed from Figures 2, 3 and 4 that the pad 26 is in fact enclosed in the sheet 24 which is wrapped round its top and bottom faces and side edges. However, arrangements in which the sheet 24 only covers the top surface or top surface and side edges of the pad 26 are also possible. A pair of elasticized strips 34 and 36 are disposed between the backing sheet 12 and the pad 26 and underlying portions 16 and 18 of the diaper. The diaper is folded in a box-pleated configuration having a central portion 40, two inwardly extending panels 42 and 44, and two outwardly extending panels 46 and 48. Adhesive spots 47 may be used to hold the pleats in place.

Each elastic member 34 and 36 may be secured by spots or lines of adhesive along preferably part of its length in the crotch area of the diaper 10 or alternatively along its entire length. A further alternative is to use the same means which are used to seal the top sheet to the backing sheet to seal the ends of the elasticized strips 34 and 36 to the backing sheet 22. These means may be adhesive or hot melt adhesive lines.

The elastic strips 34 and 36 may be of any suitable construction and composition and materials such as conventional rubberized (or otherwise elastomerized) fibres or may be simply a strip of elastomeric resin or foamed resin which may or may not be provided with adhesive. Such strips are generally available as double-sided transfer tapes (e.g. 3M Co., St. Paul, Minnesota, tape No. 465 high tack pressure-sensitive tape). In addition one may apply the elastic material, e.g. a rubber band, and secure the same with a suitable adhesive (e.g. of hot melt or pressure sensitive type). The adhesive may be a continuous line or may be a series of adhesive spots which may be applied on one or both sides of the elastic material. In use, the diaper is positioned on the infant in a conventional manner with the conventional waist tape fastener placing tension on the elastic members 34 and 36 thus forming

crotch seals. However, the pad 26 is between the elastic members 16 and 18 and the infant and serves to reduce the incidence of lines or marks on the infant's skin thus increasing the infant's comfort while also increasing fluid tightness.

#### CLAIMS

1. A disposable diaper comprising a backing sheet secured to a top sheet with an absorbent pad located therebetween, a pair of spaced elasticized members disposed between the said backing sheet and the said pad, so that the said pad cushions the effect of the elastic members in use.

2. A disposable diaper as claimed in Claim 1, including means securing the central portions of the said elastic members to the said backing sheet.

3. A disposable diaper as claimed in Claim 1 or Claim 2 in which the said backing sheet has marginal edges folded over the said top sheet and bonded thereto, the said elastic members lying

below the said marginal edges.

4. A disposable diaper as claimed in any one of Claims 1 to 3 in which the said top sheet is bonded to the said backing sheet by hot melt, or heat sealing techniques.

5. A disposable diaper as claimed in any one of Claims 1 to 4 in which the top sheet also extends around the sides and back of the absorbent pad.

6. A disposable diaper as claimed in any one of Claims 1 to 5 in which the said diaper is of a generally rectangular shape.

7. A disposable diaper as claimed in any one of claims 1 to 6 which is folded into a box-pleated configuration.

8. A disposable diaper as claimed in Claim 7 in which the said box-pleat configuration includes a main body portion, an inwardly extending pair of panels, and an outwardly extending pair of panels, the said elastic members being disposed in outer portions of the said outwardly extending panels.

9. A disposable diaper as claimed in Claim 1 substantially as specifically described herein with reference to the accompanying drawings.